

A new dendrochirotid sea cucumber from the west coast of South Africa (Echinodermata: Holothuroidea: Cucumariidae)

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Five specimens of a small cucumariid holothuroid collected between 18–32 m, from off St. Helena Bay on the west coast of Western Cape Province, South Africa, are new to science and here described. The presence of unequal tentacles, naked interambulacra, smooth prolonged handle of some body wall plates and the form of the tentacle and introvert deposits, in combination, sets the new species strongly apart from its congeners.

Key words: Holothuroidea, Cucumariidae, new species, *Pseudocnus thandari*, Dendrochirotida.

INTRODUCTION

While working on the Natal Museum's Deep-Sea Project (NMDP) in March 1993, D. Herbert and R. Kilburn, malacologists at the museum, collected numerous species of holothuroids off the South African coast. This material contains several new species and new South African records, some of which have already been published (Rajpal & Thandar 1998, 1999; Thandar & Rajpal 1999; Thandar 2005, 2006, 2007, in press). Five specimens from the shallow-waters of St Helena Bay, Western Cape Province, represent a new dendrochirotid holothuroid, which is described below. The new species stands apart from its congeners in the presence, in combination, of naked interambulacra devoid of podia or papillae, some body wall plates bearing a short, smooth, handle-like projection at one end, and tentacle and introvert deposits lacking rosettes or rosette-like plates. The type material is deposited in the South African Museum, Cape Town.

Subfamily Cucumariinae Ludwig, 1894

Genus *Pseudocnus* Panning, 1949

***Pseudocnus thandari* sp. n.**, Figs 1 & 2

Diagnosis. Small, barrel-shaped to slightly U-shaped cucumariid holothuroid, up to 37 mm long along ventral surface. Tentacles 10, of unequal size, longest about 3 mm, others about 2 mm, ventral two much reduced (1 mm). Podia restricted to ambulacra, in double rows, not fully retractile, interambulacra naked. Body wall ossicles comprise, perforated, single-layered knobbed plates, of two

types: (i) elongated with one end often bearing a short, smooth, handle-like projection; (ii) rounded, handle-less, rare. Podia supported by curved rods bearing a spire-like prolongation in addition to other rods developed as plates. Tentacle deposits include rods, sometimes developed as plates with irregular margins. Introvert deposits as multi-locular plates with scalloped and/or irregular margins. Rosettes absent from both tentacles and introvert.

Etymology. This species is named after my supervisor, Prof. A.S. Thandar of the University of KwaZulu-Natal, in recognition of his contributions to the taxonomy of the southern African Holothuroidea and for his expert advice and criticism during the preparation of my dissertation.

Material examined. Holotype: SAM-A27970, NMDP, St. SL 26, St. Helena Bay (32°38.32'S, 18°04.37'E), 20.iii.1993, 32 m. Paratypes: 4, SAM-A27971, NMDP, St. SL 30, off St. Helena Bay (32°39.7'S, 18°07.5'E), D. Herbert & R. Kilburn, 20.iii.1993, 18 m.

Type locality. St Helena Bay, 18–32 m.

Description of holotype. Body barrel- to slightly U-shaped (Fig. 2A), length along ventral surface 14 mm, width in mid-body 7 mm. Colour in alcohol uniform greyish-white to off-white, podia of same colouration. Mouth and anus terminal, the latter dorsally directed, anal teeth absent but five anal papillae present. Tentacles 10, retracted, bushy, of unequal size, mid-ventral two strongly reduced and two others also slightly reduced. Podia confined to ambulacra in distinct double rows, partially retractile, dorsal ones slightly reduced, diameter of sucking discs slightly larger

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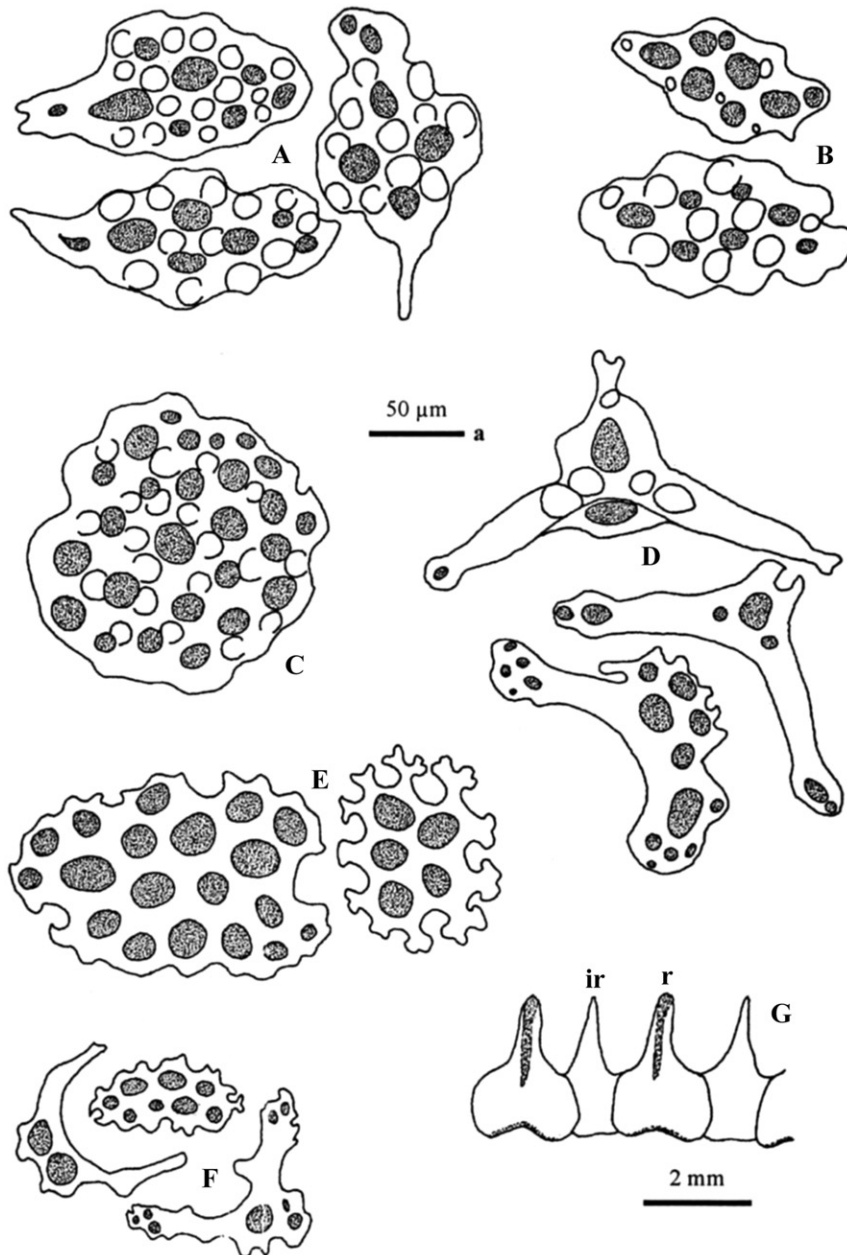


Fig. 1. *Pseudocnus thandari*. **A**, Handled plates from dorsal body wall; **B**, handle-less and developing plate from dorsal body wall; **C**, round plate from dorsal body wall; **D**, tube feet deposits; **E**, introvert plates; **F**, tentacle deposits; **G**, part of calcareous ring; r = radial plate; ir = interradial plate. (A–F, scale a).

than that of podia; interambulacra naked.

Calcareous ring (Fig. 1G) simple, radial and interradial plates of more or less equal height, both with triangular anterior projections, that of the radial plates with narrow depression for insertion of retractor muscle, that of the interradial plates

pointed; posterior margin of radial plate concave, without indication of obvious bifurcations, that of the interradial plate more or less straight. Polian vesicle and stone canal lost due to previous dissection. Gonad mature, branches intermingled with respiratory trees. The latter well branched, restricted

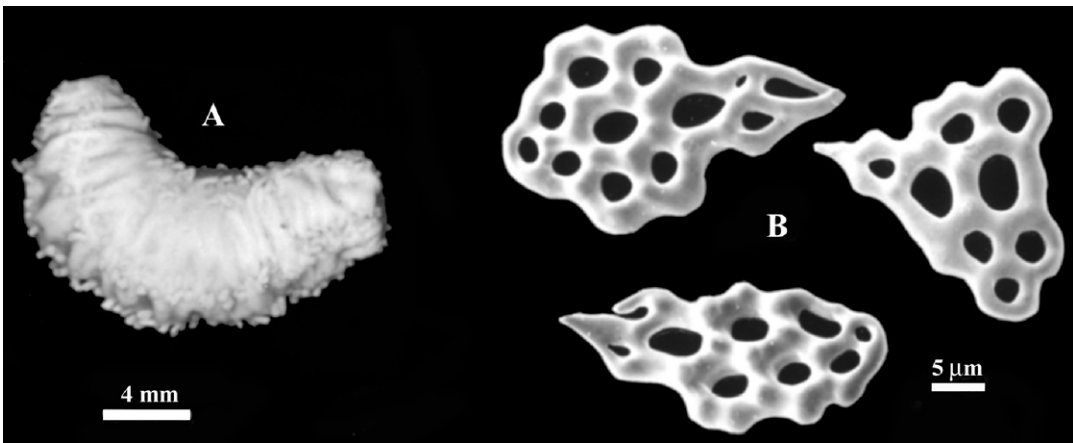


Fig. 2. *Pseudocnus thandari*. A, Paratype (entire); B, handled plates of body wall.

to posterior end. Retractor muscles arise from anterior third of longitudinal muscles, more anteriorly in ventral ambulacra. Podial ampullae distinct, one row on each side of a longitudinal muscle band.

Body wall ossicles comprise knobbed, single-layered plates of two types: one type oval to irregular, usually elongate (116–160 μm), with 6–10 holes and one end often drawn-out to form a thin, smooth, non-perforate, handle-like projection (Figs 1A, 2B), or handle absent (Fig. 1B); other type rare, usually rounded (93–175 μm) with more holes (7–20) and knobs, irregular margin and without projecting handle (Fig. 1C). Podial deposits rods, sometimes developed as plate-like deposits, 160–240 μm, curved, smooth to sparsely knobbed, with irregular margins, perforated distally and medially, usually bearing a medial, spire-like projection with a central hole, then rod appearing table-like with two-pillared spire with paired, terminal, tooth-like projections (Fig. 1D), knobs, when present, confined to centre or apex of spire. End-plates reduced (c. 140 μm). Tentacles with a variety of rods and plates (Fig. 1F), so much so that no two exactly identical; rods 76–376 μm, usually curved, medially swollen, with terminal and/or central holes, rarely developed as plates with scalloped or irregular margins, but never rosette-like. Introvert with large, smooth, round to oval, multilocular plates (44–116 μm), also with irregular or scalloped margins (Fig. 1E). Rosettes absent from both tentacles and introvert.

Description of paratypes. Size ranges from 13 × 7 mm to 37 × 10 mm. Internal and external anatomy and ossicle assemblage not significantly different from holotype. Body wall ossicles always of

two types, falling within same range of variation as the holotype, irrespective of size of specimen. Dissected paratype with single, elongated Polian vesicle and a short, slightly convoluted stone canal terminating in a multi-lobed madreporite. Sexes apparently separate, mature gonad confirmed in two specimens, comprising short, slightly curved tubules attached to an elongated stolon.

Distribution. St Helena Bay, Western Cape Province, South Africa, 18–32 m.

Habitat. Sandstone or sandy substrate covered by blocks and rubble, associated with sponges and ophiuroids.

Remarks. In the presence of two well-defined rows of podia per ambulacrum, the naked interambulacra, the absence of incomplete, basket-like deposits in the body wall and in the presence therein of knobbed, single-layered plates, the new species is referable to *Pseudocnus* Panning, 1949 rather than to *Pseudocnella* Thandar, 1987. However, in many species of *Pseudocnus*, the tentacles are of equal length and the podia often also scattered in the ambulacra, of especially *P. dubiosus* (Semper, 1868), the type species and its several subspecies (see Panning 1962). In the unequal size of the tentacles and the presence of naked interambulacra and smooth, prolonged handles to some body wall plates, the new species differs significantly from its congeners. In some features it comes quite close to *P. echinatus* (Marenzeller, 1881) from Japan, China and the Red Sea (see also Mitsukuri 1912; Liao & Clark 1995; Cherbonnier 1963). However, in *P. echinatus*, the prolongation of the plates is very long, spine-like and perforated at least at one end and there are rosettes in both tentacles and introvert. The new species does not

appear to be close to any other nominal species of *Pseudocnus*.

Panning (1949) did not clearly distinguish between several of his cucumariid genera, vaguely separating *Stereoderma* from *Pseudocnus* by the presence of one (in the former) or two (in the latter) forms of knobbed plates. Thus in some features of the body wall ossicles the new species also resembles *Stereoderma colochiriformis* (Ludwig & Heding, 1935) from Sierra Leone and Mauritania (see Cherbonnier 1957, Massin 1993). However, *S. colochiriformis* is an elongated, pentagonal species, tapering at both ends with scarce dorsal podia arranged in a single zig-zag row, as in *P. spinosus* (Ohshima, 1915). Its body wall plates often present several short spines at one end and the podial ossicles are conspicuously different with one end often sharply prolonged into a spine. Perhaps the few similarities in the ossicles of both species are a result of convergent evolution rather than indicative of a close relationship. The only other species of *Pseudocnus* recorded from southern Africa is *Cucumaria leonina* var. *africana* Britten, 1910, from Lüderitz (Namibia), assigned to *Pseudocnus* by Panning (1949). This species was erroneously relegated to the synonymy of *Pseudocnella insolens* (Théel, 1886) by H.L. Clark (1923), Deichmann (1948), Cherbonnier (1952) and Thandar (1987, 1991). It is well known that both Clark (1923) and Deichmann (1948) failed to distinguish clearly between the different southern African forms of *Cucumaria* with knobbed plates as body wall deposits (currently classified in *Pseudocnella* – see Thandar 1987). Cherbonnier (1952) and Thandar (1987, 1991) on the other hand, although separating the confused forms, followed Clark (1923) and Deichmann (1948), retaining Britten's species as a synonym of *P. insolens*. Thandar, in fact, ignored Panning's (1962) redescription of Britten's species as *Pseudocnus dubiosus africanus* from type material. Thandar (pers. comm.) is now of the opinion that relegating Britten's species to the synonymy of *Pseudocnella insolens* is inadmissible as the latter species is characterized by spinous, cross-shaped baskets in the outer body wall, not described for *C. l. africana* by both Britten (1910) and Panning (1962). Hence, for the time being, it is wise to follow Panning (1962) in recognizing Britten's material as a valid species/subspecies of *Pseudocnus*. It differs from *P. thandari* in its dark greyish brown colouration, scarce dorsal podia and body wall plates lacking a handle-like projection, although most plates appear roughened at one

end. *Pseudocnus dubiosus africanus* may prove synonymous with *Pseudocnella sykion*, but its plates appear to be composed of only a single layer of calcareous material.

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